NASA Policy Directive

NPD 7120.6
Effective Date: November 26, 2013
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COMPLIANCE IS MANDATORY

Printable Format (PDF)

[Request Notification of Change] (NASA Only)

Subject: Knowledge Policy on Programs and Projects

Responsible Office: Office of the Chief Engineer

1. POLICY

a. It is NASA policy to:

(1) Effectively manage the Agency's knowledge to cultivate, identify, retain, and share knowledge in order to continuously improve the performance of NASA in implementing its mission, in accordance with NPD 1000.0, Governance and Strategic Management Handbook. Individuals at all levels must take responsibility for retaining, appropriately sharing or protecting, and utilizing knowledge. In order to meet future challenges, innovate successfully, and keep pace with the state of the art in rapidly changing times, NASA will focus on the following critical activities:

a) Ensure that the Agency's knowledge is captured and accessible across all Centers with appropriate measures to safeguard sensitive but unclassified (SBU) knowledge and comply with Federal laws and regulations.

b) Promote an environment that fosters continuous learning and adaptation to emerging technological and governing conditions.

c) Promote the use of leading practices in knowledge cultivation, identification, retention, utilization, and sharing of the Agency's collective know-how. NASA Centers, Mission Directorates, and mission support organizations, as identified in NPD 1000.3, The NASA Organization, employ a range of knowledge management approaches and practices to address their unique capabilities, missions, and institutions. NASA Centers and Mission Directorates share their knowledge management practices and solutions to common knowledge challenges and adopt leading practices from others to achieve continuous improvement and increased efficiency.

d) Address the impacts of knowledge loss through attrition, workforce demographic trends, such as increases in NASA's retirement-eligible or young professional population, program terminations by anticipating knowledge gaps, and execution of focused mitigations that benefit future knowledge users.

e) Support NASA policy that NASA leaders, managers, supervisors, and employees participate in ongoing training and skills enhancement for project and program excellence, in accordance with NPD 7120.4, NASA Engineering and Program/Project Management Policy, and NPR 7120.5, NASA Space Flight Program and Project Management Requirements. This includes skills development in the effective identification, capture, and transfer of knowledge. NASA is committed to developing new ways of sharing and transferring knowledge, as well as developing tools, practices, and processes that facilitate learning.

f) Govern the knowledge management enterprise on a federated basis, such that each Center and Mission Directorate determines the approach that best meets its needs, with the understanding that knowledge applicable to all NASA missions and Centers will be shared to the extent possible across the entire Agency.

b. Each organization shall implement continuous improvement of knowledge management processes.

2. APPLICABILITY

a. This NPD is applicable to NASA Headquarters and NASA Centers, including Component Facilities and Technical

and Service Support Centers. This language applies to the Jet Propulsion Laboratory, a Federally Funded Research and Development Center, other contractors, grant recipients, or parties to agreements who create and/or maintain knowledge for, or on behalf of NASA, as specified or referenced in the appropriate contracts, grants, or agreements.

b. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms "may" or "can" denote discretionary privilege or permission; "should" denotes a good practice and is recommended, but not required; "will" denotes expected outcome; and "are/is" denotes descriptive material.

3. AUTHORITY

a. Arms Export Control Act, 22 U.S.C. §2751, et seq., as implemented by the International Traffic in Arms Regulations, 22 Code of Federal lations (CFR) Part 120-30.

b. The Federal Records Act, 44 U.S.C. §3101, et seq.

c. Export Administration Act of 1979, 50 U.S.C. Appendix §§2401-2420, as implemented by the Export Administration Regulations, 15 CFR Part 730-774.

d. The National Aeronautics and Space Act, 51 U.S.C. 20113(a).

e. Information Technology Management, Pub L. 107-217, repealing and reenacting the Clinger Cohen Act of 1996, 40 U.S.C. §§11101, et seq., as amended.

f. Electronic and Information Technology Accessibility Standards, 36 CFR Part 1194.

g. Office of Management and Budget (OMB) Circular A-130, Management of Federal Information Resources.

4. APPLICABLE DOCUMENTS

a. NPD 1000.0, NASA Governance and Strategic Management Handbook.

b. NPD 1000.3, The NASA Organization.

c. NPR 2190.1B, NASA Export Control Program.

d. NPD 7120.4, NASA Engineering and Program/Project Management Policy.

e. NPD 1382.17H, NASA Privacy Policy.

f. NPR 1382.1A, NASA Privacy Procedural Requirements.

g. NID 1600.55, Sensitive But Unclassified Information.

h. NPR 2200.2, Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information.

i. NPR 7120.5, NASA Space Flight Program and Project Management Requirements.

5. RESPONSIBILITY

a. The NASA Chief Engineer shall:

(1) the principal advisor to the Administrator and other senior officials on matters pertaining to NASA's knowledge and related services.

(2) Provide strategic guidance to the NASA Chief Knowledge Officer (CKO) for coordinating Agency-wide initiatives to advance capabilities in identifying, capturing, and transferring knowledge.

(3) Champion and support NASA-wide efforts that lead to greater integration and collaboration across the Agency.

(4) Provide oversight of knowledge enterprise goals and act as an agent of change for the organization through leadership and interpersonal skills.

(5) Guide efforts for Agency-level standards and policies as applied to knowledge management.

(6) Support efforts to collect and analyze measurement data to monitor the effectiveness of NASA's knowledge management services.

(7) Promote NASA's knowledge-sharing efforts and best practices with senior executive Agency leadership and across the Federal and international senior executive leadership communities.

b. Center Directors and Mission Directorate Associate Administrators shall appoint a CKO or point of contact responsible for overseeing the planning and execution of knowledge activities within their respective organizations

and supporting the Agency CKO in planning and implementing the Agency's knowledge system.

c. The NASA CKO is responsible for policy and integration of knowledge services across programs and projects in the Centers and Mission Directorates and reports to the Office of the Chief Engineer.

The NASA CKO shall:

(1) Coordinate Agency-wide initiatives to advance capabilities in identifying, capturing, and transferring knowledge.

(2) Encourage organizational practices, training, and resources that build, develop, and sustain an organizational culture that enhances the knowledge management effort.

(3) Provide direction to the enterprise goals and act as an agent of change for the Agency through leadership and interpersonal skills.

(4) Promote the role of knowledge and knowledge management priorities both inside and outside NASA.

(5) Advise the Agency Program Management Council and external stakeholders on matters pertaining to NASA's knowledge activities.

(6) Promote the use of best practices in knowledge identification, capture, and transfer.

(7) Facilitate the dissemination and promote utilization and implementation of lessons learned and best practices.

(8) Collect and analyze measurement data to monitor the effectiveness of NASA's knowledge management capabilities.

(9) Conduct and promote knowledge-sharing activities, including online resources, forums, and publications, consistent with current information protection standards, policies, and procedures.

(10) Ensure coordination with the Office of the Chief Information Officer, the Office of International and Interagency Relations, the Office of the General Counsel, and other offices, as appropriate, on protecting and managing knowledge consistent with NASA policy, Federal law, and regulations.

d. Center and Mission Directorate CKOs and knowledge points of contact are appointed to facilitate capture and sharing of stories, case studies, and lessons learned; serve as advocates for the knowledge needs of their respective organizations; and support the Agency CKO to ensure the effective implementation of the Agency's knowledge policy. They shall:

(1) Be responsible for overseeing the planning and execution of the Center's or Mission Directorate's knowledge management activities.

(2) Build, develop, and support the Center or Mission Directorate's culture to enhance the knowledge management effort.

(3) Provide direction to the Center's or Mission Directorate's goals, and act as an agent of change for the organization through leadership, interpersonal skills, and subject matter expertise.

(4) Develop a knowledge strategy for their respective organizations. Each organization's knowledge strategy shall consider the following principles:

(a) The effective use of knowledge is essential to fulfill NASA's vision. The expertise of NASA's workforce; the patents, records, and artifacts produced; and the Agency's ability to carry out complex projects are forms of knowledge that make it possible to successfully execute the Agency's mission and to create the technological advances that benefit society at large. Knowledge is the cornerstone of NASA's ability to achieve mission success.

(b) Like other large, knowledge-intensive organizations, NASA faces continuous challenges in using what it knows effectively. These challenges include enabling the identification and flow of knowledge across organizational boundaries; ensuring that knowledge is sound, relevant, comprehensible, and adopted where needed; developing and supporting networks of expertise; preserving knowledge at risk of being lost; and providing means for individuals, teams, and the organization to learn from experiences.

(c) Knowledge management focuses on the policies, processes, and practices that allow the Agency to identify and manage knowledge gained by its workforce in varied forms. Knowledge management specifically addresses how knowledge is created, retained, shared, and transferred throughout NASA and with its partners and contractors. It involves dynamic contextual learning that supports the effective transfer and utilization of knowledge throughout the Agency. Knowledge management is critical for sustaining and expanding the use of the Agency's intellectual capital across NASA's enterprises and generations, increasing collaboration across barriers, and supporting the workforce in successfully carrying out NASA's missions.

(d) Each Center and Mission Directorate's knowledge strategy shall:

Identify and capture knowledge critical to NASA's mission; assess gaps in knowledge retention and sharing; and

plan measures to address knowledge management gaps, using approaches that may include online tools, search/tag/taxonomy tools, case studies and publications, lessons learned/knowledge processes, knowledge networks, or face-to-face activities.

(5) Share their knowledge strategy at an annual meeting convened by the NASA CKO for the purpose of promoting greater Agency integration and collaboration.

(6) Actively promote the role of knowledge and the knowledge management agenda both inside and outside NASA.

(7) Identify resources, capabilities, and infrastructure necessary to support knowledge management in organizations.

(8) Align knowledge management practices with Agency needs and policies.

(9) Support and provide information for assessments conducted by the Agency CKO.

(10) Ensure coordination with the Office of the Center Chief Information Officer, the Export Administrator, the Office of the Chief Counsel, and other offices, as appropriate, on protecting and managing knowledge consistent with NASA policy, Federal law, and regulations.

e. NASA employees will actively participate in knowledge-sharing activities to ensure mission success and the retention of vital information and lessons learned as follows:

(1) Assume responsibility for gathering, organizing, and sharing knowledge.

(2) Host and attend knowledge-sharing sessions across organizations.

(3) Actively participate in knowledge activities in order to learn and contribute knowledge to the shared goal of mission success.

(4) Ensure that technical reports, data, or other means used to document knowledge are marked with respect to proprietary or export control restrictions and consistent with guidance set forth for SBU in NID 1600.55 at the time of generating those documents.

6. DELEGATION OF AUTHORITY

None.

7. MEASUREMENT/VERIFICATION

Key performance indicators will be identified and implemented to assess the Agency's effectiveness at managing its knowledge. Key performance indicators will be evaluated periodically to ensure they are providing a meaningful assessment of the Agency's effectiveness.

8. CANCELLATION

NPR 7120.6, NASA Lessons Learned Process, dated March 22, 2005.

/s/ Charles F. Bolden, Jr.
Administrator

ATTACHMENT A: (TEXT)

Artifacts- Unique objects that document the history of the science and technology of aeronautics and astronautics. Their significance and interest stem mainly from their relation to the following: historic flights, programs, activities, or incidents; achievements or improvements in technology; an understanding of the universe; and important or well-known personalities.

Best Practices- Sets of defined guidelines, methods, or techniques that have consistently represented the perceived optimal way of performing a process, operation, or handling of a task.

Case Studies- Documentation that captures real events, project stories, lessons learned, or best practices, including written or multimedia accounts of missions that cause people to draw their own lessons from the discussion (e.g., GSFC case studies; APPEL cases studies, and ASK Magazine stories; and NASA Safety Center case studies), illustrating both positive and negative outcomes.

Codified Knowledge- Knowledge conveyed in explicit form or represented in "code," such as words, equations, notations, etc.

Communities of Practice- Networks of people sharing occupational or vocational common interests, usually limited in size, coming together to share and to learn from one another.

Explicit Knowledge- Knowledge that has been articulated, codified, and stored (e.g., procedures, manuals, how-to videos, data, documents, or images).

Face-to-Face- Any activities that bring people together in person to share knowledge and enhance relationships, trust, and open exchanges (e.g., forums, workshops, Lunch and Learn/Pause and Learn, or knowledge cafes). Impact can be multiplied through online sharing.

Information- A codified message presented in context.

Knowledge- In individuals: rich, complex, and organized pattern recognition and understanding. In organizations: the collective capability and capacity to perform an operation (e.g., NASA knows how to design space vehicles).

Knowledge Gaps- Gaps in knowledge as a result of retirements, workforce demographic trends, program closeouts, the introduction of new environment issues, or unanticipated knowledge needs.

Knowledge Management- A collection of policies, processes, and practices relating to the use of intellectual- and knowledge-based assets in an organization.

Knowledge Management Enterprise- The total scope of activities across NASA dedicated to capturing, using, or disseminating knowledge, including the efforts of individuals with knowledge-related roles and responsibilities (e.g., CKOs and formal points of contact).

Knowledge Networks- Any defined knowledge network, such as a community of practice, expert locator, mass-collaboration activity, or workspace specifically designed to enable exchanges and collaboration, or developed or created with the specific aim of developing and sharing knowledge.

Knowledge Sharing- An activity through which knowledge is exchanged.

Knowledge Transfer- To transfer a body of explicit knowledge, artifacts, or know-how from one entity to another, enabling the recipient to actively use the newly acquired knowledge.

Lessons Learned- Captured knowledge or understanding gained through experience which, if shared, would benefit the work of others. Unlike a est practice, lessons learned describes a specific event that occurred and provides recommendations for obtaining a repeat of success or for avoiding reoccurrence of an adverse work practice or experience.

Lessons Learned/Knowledge Processes- Any defined process an organization uses to identify or capture knowledge, lessons learned, or best practices, including Lessons Learned Information System vetting processes, organization-specific lessons learned processes, benchmarking, use cases, knowledge sharing recognition programs, knowledge product validation processes, and communications about expectations related to knowledge sharing.

Online Tools- Any Web-based means for managing or sharing knowledge, including, but not limited to, portals, document repositories, collaboration and sharing sites, and video libraries.

Record- All books, papers, maps, photographs, negatives, machine-readable materials, diskettes, microfilm, audio tapes, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the U.S. Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of the data contained therein. Library and museum material made or acquired and preserved solely for reference or exhibition purposes, extra copies of documents preserved only for convenience of reference, and stocks of publications and/or processed documents are not included. Machine-readable materials include, but are not limited to, optical disk, magnetic tape, sound recordings, microforms, and any other such recording medium regardless of how produced.

Search/Tag/Taxonomy Tools- A dedicated search engine for knowledge or any initiative related to meta-tagging or taxonomy.

Success Story- An exemplary initiative that has shown notable achievement in its specific area.

Tacit Knowledge- Knowledge that is embodied in an individual, making it difficult or impossible to express explicitly.

Taxonomy- A collection of preferred terms and concepts to represent the corpus of NASA knowledge.

Use case- An example of the need for, and application of, knowledge management to accomplish a specific

purpose.

ATTACHMENT B: ACRONYMS

APPEL Academy of Program/Project and Engineering Leadership

ASK Academy Sharing Knowledge

CFR Code of Federal Regulations

CKO Chief Knowledge Officer

GSFC Goddard Space Flight Center

KM Knowledge Management

NASA National Aeronautics and Space Administration

NPD NASA Policy Directive

NPR NASA Procedural Requirements

NID NASA Interim Directive

OMB Office of Management and Budget

POC Point of Contact

PRA Probabilistic Risk Assessment

U.S.C. United States Code

ATTACHMENT C: REFERENCES

C.1 NPD 1000.5, Policy for NASA Acquisition.

C.2 NPD 1440.6, NASA Records Management.

C.3 NPD 2800.1, Managing Information Technology.

C.4 NPD 8700.1, NASA Policy for Safety and Mission Success.

C.5 NPR 7120.7, NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements.

C.6 NPR 7120.8, NASA Research and Technology Program and Project Management Requirements.

C.7 NPR 7120.10, Technical Standards for NASA Programs and Projects.

C.8 NPR 7123.1, NASA Systems Engineering Processes and Requirements.

C.9 NPR 8000.4, Agency Risk Management Procedural Requirements.

C.10 NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping.

C.11 NPR 8705.4, Risk Classification for NASA Payloads.

C.12 NPR 8705.5, Technical Probabilistic Risk Assessment (PRA) Procedures for Safety and Mission Success for NASA Programs and Projects.

C.13 NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments.

C.14 NPR 8715.3, NASA General Safety Program Requirements.

C.15 NPR 8820.2, Facility Project Implementation Guide.

C.16 NPR 8831.2, Facilities Maintenance and Operations Management.

C.17 OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities.

(URL for Graphic)

None.

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